The invention claimed is:

1. A system having dynamic unbalance compensation, said system comprising:

a support member;

a rotational assembly mounted on the support member and rotatable about an axis of rotation relative to the support member; and

a momentum device mounted on the rotational assembly and generating a momentum vector component perpendicular to the axis of rotation, wherein the momentum vector component generates a compensation torque when the rotational assembly spins so as to compensate for dynamic unbalance of the rotational assembly.

2. The system as defined in claim 1, wherein the momentum device comprises a rotating momentum wheel.

3. A system as defined in claim 1, wherein the momentum device is oriented to provide an angular momentum vector substantially perpendicular to the axis of rotation.

4. The system as defined in claim 1, wherein the momentum device is oriented to generate a first component of the momentum vector perpendicular to the axis of rotation and a second component of the momentum vector parallel to the axis of rotation.

5. The system as defined in claim 1, wherein the momentum device comprises a first momentum device and a second momentum device.

6. The system as defined in claim 5, wherein the first and second momentum devices form a scissored pair.

7. The system as defined in claim 1, wherein the momentum device comprises first, second, and third momentum devices.

8. The system as defined in claim 7, wherein the first, second, and third momentum devices are mounted on the rotational assembly equiangularly located about the axis of rotation.

9. The system as defined in claim 1, wherein the support member comprises a vehicle.

10. The system as defined in claim 9, wherein the vehicle comprises a spacecraft.

11. The system as defined in claim 1, wherein the rotational assembly comprises an instrument.

12. The system as defined in claim 1 further comprising a controller for controlling at least one of speed and orientation of the momentum device so as to control the momentum vector.

13. A spacecraft system having dynamic unbalance compensation, said system comprising:

a spacecraft;

a rotational assembly mounted on the spacecraft and rotatable about an axis of rotation relative to the spacecraft; and

a momentum device mounted on the rotational assembly and generating a momentum vector component perpendicular to the axis of rotation, wherein the momentum vector component generates a compensation torque when the rotational assembly spins so as to compensate for dynamic unbalance of the rotational assembly.

14. The system as defined in claim 13, wherein the momentum device comprises a rotating momentum wheel.

15. A system as defined in claim 13, wherein the momentum device is oriented to provide an angular momentum vector substantially perpendicular to the axis of rotation.

16. The system as defined in claim 13, wherein the momentum device is oriented to generate a first component of the momentum vector perpendicular to the axis of rotation and a second component of the momentum vector parallel to the axis of rotation.

17. The system as defined in claim 13, wherein the momentum device comprises a first momentum device and a second momentum device.

18. The system as defined in claim 17, wherein the first and second momentum devices form a scissored pair.

19. The system as defined in claim 13, wherein the momentum device comprises first, second, and third momentum devices.

20. The system as defined in claim 19, wherein the first, second, and third momentum devices are mounted on the rotational assembly equiangularly located about the axis of rotation.

21. The system as defined in claim 13, wherein the rotational assembly comprises an instrument.

22. The system as defined in claim 13 further comprising a controller for controlling at least one of speed and orientation of the momentum device so as to control the momentum vector.

23. A method of balancing a dynamic unbalanced rotating assembly on a vehicle, said method comprising the steps of:

providing a vehicle having a rotational assembly mounted on the vehicle;

rotating the rotational assembly about an axis of rotation relative to the vehicle;

applying momentum in a vector perpendicular to the axis of rotation to generate a compensation torque during rotation of the rotational assembly so as to compensate for dynamic unbalance of the rotational assembly.

24. The method as defined in claim 23, wherein the step of applying momentum comprises mounting a momentum device on the rotational assembly.

25. The method as defined in claim 23, wherein the step of applying momentum comprises spinning a momentum wheel.

26. The method as defined in claim 23, wherein the step of applying momentum comprises generating a first component of the momentum vector perpendicular to the axis of rotation and a second component of the momentum vector parallel to the axis of rotation.

27. The method as defined in claim 23, wherein the step of applying momentum comprises applying momentum with a first momentum device and a second momentum device.

28. The method as defined in claim 27, wherein the step of applying momentum further comprises applying momentum with a third momentum device.

29. The method as defined in claim 23 further comprising the step of controlling at least one of speed and orientation of the momentum device so as to control the momentum vector.